

**REMEDIAL ACTION PLAN
AAA BOATYARDS SITE
CHICAGO, ILLINOIS**

Prepared for

CITY OF CHICAGO DEPARTMENT OF ENVIRONMENT
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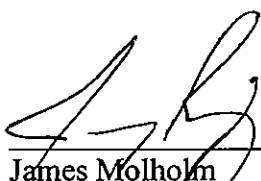
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**REMEDIAL ACTION PLAN
AAA BOATYARDS SITE
CHICAGO, ILLINOIS**

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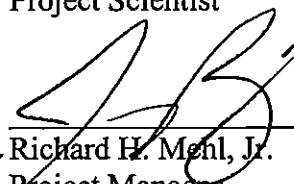
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EXECUTIVE SUMMARY

This Remedial Action Plan (RAP) is for the former AAA Boatyards property (AAA Boatyards Site) located at 1111 North Elston Avenue in Chicago, Cook County, Illinois. This report was prepared by Weston Solutions, Inc. (Weston) on behalf of the City of Chicago Department of Environment (DOE). The development of the RAP was conducted in accordance with the Illinois Environmental Protection Agency (IEPA) Site Remediation Program (SRP) requirements, pursuant to Title 35 Illinois Administrative Code (35 IAC) Part 740 and the Tiered Approach to Corrective Action Objectives (TACO) guidance in 35 IAC Part 742.

The AAA Boatyards Site is an irregularly-shaped, 1.7-acre lot currently zoned as a planned manufacturing district. Redevelopment activities are planned to utilize the AAA Boatyards Site as a recreational park. Following the completion of redevelopment activities, including the excavation and off-site disposal of site soil and the installation of engineered barriers, the park property will include paved areas and open landscaped areas.

The AAA Boatyards Site was enrolled in the IEPA SRP in 2005. Site investigation activities were completed from 22 to 23 December 2004 and on 6 January 2005. Discussion of these site investigation activities, as well as other previously completed investigation, was presented within a combined Comprehensive Site Investigation Report (CSIR) and Remediation Objectives Report (ROR) (Weston, March 2005).

Remedial Action

To eliminate the exposure pathways identified within the CSIR/ROR (Weston, March 2005), the following remedial actions are proposed;

- Horizontal engineered barriers - These barriers (e.g. concrete and clean fill) will be constructed to eliminate the ingestion exposure route in accordance with 35 IAC Section 742.310 and 742.315. The engineered barriers will be constructed in accordance with 35 IAC Section 742.1100 and 742.1105.
- On-site relocation of contaminated media utilizing a soil management zone (SMZ) – Site soil containing concentrations of contaminants above the Tier 1 residential soil remediation

objectives for the ingestion and the migration to Class I groundwater exposure routes will be relocated at the AAA Boatyards Site for the purposes of site grading.

- Removal of contaminated media – Site soil containing concentrations of contaminants above the Tier 1 residential soil remediation objectives for the inhalation exposure route will be excavated and transported off-site as special waste for disposal at a licensed landfill. Additionally, excess soil containing concentrations of contaminants above the Tier 1 residential soil remediation objectives for the ingestion and migration to Class I groundwater exposure routes may be excavated and transported off-site as special waste for disposal at a licensed landfill. Backfilling of the excavated areas will be completed as required by the redevelopment plan.

Another component of the RAP is the use of institutional controls to eliminate the threat of exposure to contaminated media. The following institutional controls will be utilized for the AAA Boatyards Site

- To eliminate both the migration to Class I groundwater and the groundwater ingestion exposure routes, the City of Chicago Groundwater Ordinance will be utilized as an institutional control. The use of the Groundwater Ordinance, in conjunction with the Memorandum Of Understanding (MOU) executed between the IEPA and City of Chicago, will prohibit installation and use of groundwater wells as a source of potable water within Chicago city limits.
- The No Further Remediation (NFR) letter issued for the Site will detail the notification requirements for intrusive activities that may temporarily breach an engineered barrier. The NFR letter will also detail the long-term maintenance requirements for the engineered barriers utilized at the AAA Boatyards Site.

Upon IEPA approval of this report, the Chicago DOE will implement the proposed remedial activities and provide documentation in the Remedial Action Completion Report.

REMEDIAL ACTION PLAN

This Remedial Action Plan (RAP) is for the former AAA Boatyards property (AAA Boatyards Site, or Site) located at 1111 North Elston Avenue in Chicago, Cook County, Illinois. This report was prepared in accordance with the requirements of the Illinois Environmental Protection Agency (IEPA) Site Remediation Program (SRP). This report was prepared by Weston Solutions, Inc. (WESTON) for the City of Chicago Department of Environment (DOE).

This report is organized in accordance with the requirements of the IEPA SRP guidelines for a RAP (35 Illinois Administrative Code [IAC] Part 740). The objective of this report is to obtain IEPA approval of the proposed remedies to eliminate the risks posed by contaminants contained within the AAA Boatyards Site.

The proposed remedial strategy will consist of the following elements; establishment of a soil management zone; removal and/or relocation of contaminated material, implementation of engineered barriers, and exclusion of exposure routes through institutional controls.

1.0 SITE BACKGROUND

The AAA Boatyards Site is located to the southeast of the intersection of Division Street and North Elston Avenue in Chicago, Cook County, Illinois. The site is located within Section 5 of Township 39 North, Range 14 East, and the approximate geographic coordinates of the site are 41° 54' 07" north latitude and 87° 39' 24" west longitude, at an approximate altitude of 590 feet above sea level.

The AAA Boatyards Site is an irregularly-shaped, 1.7-acre lot currently zoned as a planned manufacturing district. The Site formerly contained a steel-framed canopy used for boat storage space, two one-story steel-framed buildings, and various storage and shipping containers.

The Site is enclosed by a chain-link fence on all sides except to the east, which is accessible only from the North Branch of the Chicago River. The ground surface at the Site is covered with gravel and an extensive concrete surface on the north end of the Site. The Site is bounded by

Elston Avenue to the west, a nightclub/restaurant at 1117 North Elston Avenue to the north, the North Branch of the Chicago River to the east, and an industrial property (former Chicago Paperboard Corp.) to the south. A site location map of the AAA Boatyards Site is shown in Figure 1.

The land surrounding the AAA Boatyards Site consists of planned manufacturing districts, commercial/manufacturing districts, and heavy manufacturing districts. The Peoples Gas, Light and Coke Company currently occupies the adjacent property to the west, across Elston Avenue; the former Chicago PaperBoard Corp. property occupies the adjacent property to the south; the Life's Too Short nightclub occupies the adjacent property to the north; and Loeber Motors and Chas Levy Circulating occupy the properties to the east, across the North Branch of the Chicago River.

The AAA Boatyards Site was enrolled in the IEPA SRP in 2005. Site investigation activities were completed from 22 to 23 December 2004 and on 6 January 2005. Discussion of these site investigation activities, as well as other previously completed investigation, was presented within a combined Comprehensive Site Investigation Report (CSIR) and Remediation Objectives Report (ROR) that was submitted to the IEPA on 4 March 2005.

1.1 Site History

The AAA Boatyards Site was formerly utilized to store coal and coke in association with the Division Street Station Manufactured Gas Plant (Division Street Station-MGP). Historical records related to the MGP portion of the Site's history refer to the Site as the Marina Site. Historical records for the Division Street Station date back to 1883, when a major stockholder of Peoples Gas constructed the facility to produce water gas. The Marina Site was part of the 16.3-acre gas production and storage facility; however, historical use of the Marina Site was limited to coal and coke storage. From 1885 to 1897, the Division Street Station was operated by the Illinois Light, Heat, and Power Company. In 1897, the Illinois Light, Heat, and Power Company consolidated with Peoples Gas. Peoples Gas operated the facility until sometime prior to 1962, when all above-ground structures were razed.

The exact date that Peoples Gas first utilized the Marina Site for coal and coke storage is unknown. A 1914 Sanborn Map illustrates a coke shed at the Marina Site and a coke conveyor belt leading from the Marina Site to a coke hopper at the Division Street Station. The 1950 Sanborn Map shows no structures present at the Marina Site. The 1975 Sanborn maps show a boat storage facility constructed of iron. A second metal building is shown to the north of the boat storage facility in the 1988 and 1990 Sanborn Maps.

AAA Boatyard Inc. operated the boatyards through 31 July 2003, when the City of Chicago purchased the property. Redevelopment activities are planned to utilize the AAA Boatyards Site as a recreational park.

1.2 Statement of Remediation Objectives

Site investigation activities were completed across the AAA Boatyards Site to investigate potential contamination associated with historical uses of the land. Contaminants were detected at concentrations above the Tier 1 residential soil remediation objectives and above the Tier 1 groundwater remediation objectives for Class I groundwater. Within soil, concentrations of VOCs, PNAs, SVOCs, and metals were detected at concentrations above the most restrictive Tier 1 residential soil remediation objectives in soil samples collected across the entire site. Chemical concentrations were above the Tier 1 residential soil remediation objectives for the soil ingestion, inhalation, and migration to Class I groundwater exposure route.

Within the soil sample collected from AAA-SB05 (1 to 3 feet below ground surface [bgs]), the concentration of benzene was above the Tier 1 residential soil remediation objective for the inhalation exposure route. This benzene concentration is associated with an area of stained surface soil identified at the Site and is likely limited to the immediate vicinity of AAA-SB005 and a nearby stained surface soil area. In addition, exceedances of the Tier 1 residential soil remediation objectives for the ingestion exposure route were detected within every surface soil (0 to 3 feet) across the Site. No specific sources of contamination were identified in association with the exceedances of the ingestion exposure route.

In groundwater, concentrations of benzo(a)anthracene from temporary monitoring well AAA-MW02, thallium from temporary monitoring well AAA-MW01, and manganese from three temporary monitoring well (AAA-MW01, AAA-MW02, and AAA-MW03) were detected at concentrations above the Tier 1 groundwater remediation objectives for Class I groundwater.

Figures 2 and 3 illustrate the locations of soil samples exceeding the Tier 1 soil remediation objectives for the ingestion and inhalation exposure routes in surface and subsurface soil, respectively. Figure 4 illustrates the locations of soil samples exceeding the Tier 1 soil remediation objective for the migration to Class I groundwater exposure route.

In the IEPA-approved ROR (Weston, March 2005), Tier 2 soil remediation objectives were proposed using U.S. EPA Soil Screening Level (SSL) methods for contaminant concentrations that exceed the Tier 1 soil remediation objective for the migration to Class I groundwater exposure route. For contaminant concentrations that exceeded these Tier 2 remediation objectives, Tier 2 Risk Based Corrective Action (RBCA) R14 and R26 evaluations were performed to estimate the distances that leachate contaminant concentrations could travel prior to attenuating to the Tier 1 Class I groundwater remediation objectives. The Chicago DOE intends to exclude the migration to groundwater exposure route using the City of Chicago's groundwater ordinance as an institutional control.

The ROR also contained Tier 2 RBCA R26 evaluations of the detected groundwater contaminants. These evaluations demonstrated that the benzo(a)anthracene concentration will meet Tier 1 Class I groundwater remediation objectives and the applicable surface water quality standard prior migrating off-site. The Tier 2 RBCA R26 evaluations predicted that manganese and thallium concentrations may impact off-site groundwater. The distances that these contaminants may travel prior to attenuating to the Tier 1 Class I groundwater remediation objectives were calculated in the ROR. No potable water wells were identified downgradient of the Site within the calculated distances. The DOE intends to exclude both the on-site and off-site portions of the groundwater ingestion exposure route using the City of Chicago's groundwater ordinance as an institutional control.

A full discussion of the remediation objectives (both Tier 1 and Tier 2) is presented in the combined CSIR/ROR (Weston, March 2005). This report was approved by the IEPA on 30 December 2005. The remediation objectives proposed by the DOE and approved by the IEPA are summarized below.

Ingestion Exposure Route – The Tier 1 residential soil remediation objectives for the ingestion exposure route were proposed and approved for the ingestion exposure route.

Inhalation Exposure Route – The Tier 1 residential soil remediation objectives for the inhalation exposure route were proposed and approved for the inhalation exposure route. The benzene concentration of 6.8 milligrams per kilogram (mg/kg) detected within soil sample AAA-SB05 (1 to 3 feet) was the only soil concentration above the Tier 1 residential soil remediation objectives for the inhalation exposure route.

Migration to Groundwater Exposure Route – The SSL-derived Tier 2 soil remediation objectives listed below were approved for the migration to groundwater exposure route.

| Chemical | Surface Soil Remediation Objective (mg/kg) | Subsurface Soil Remediation Objective (mg/kg) |
|------------------------|---|--|
| BENZO(A)ANTHRACENE | 44.4 | 60.7 |
| BENZENE | 0.3 | -- |
| BENZO(A)PYRENE | 175 | 239.5 |
| BENZO(B)FLUORANTHENE | 190 | 259.9 |
| DIBENZO(A,H)ANTHRACENE | 978.1 | 1,338.4 |
| CARBAZOLE | 11.6 | 15.9 |
| 2-METHYLAPTHHALENE | -- | 224.3 |

Surface Soil Remediation Objectives Apply to Soil Samples Collected from 0 to 3 feet bgs
Subsurface Soil Remediation Objectives Apply to Soil Sample Collected from below 3 feet bgs
mg/kg = milligrams per kilogram

One benzene concentration (6.8 mg/kg at AAA-SB05) was above the SSL-derived Tier 2 remediation objective for the migration to groundwater exposure route. For this concentration, the City of Chicago proposed the soil concentration (6.8 mg/kg) for the remediation objective

based on the Tier 2 R14 and R26 leaching evaluation and the exclusion of the groundwater ingestion exposure route. For metals expressed as TCLP or SPLP concentrations above the Tier 1 groundwater remediation objectives, the metal concentrations were proposed as remediation objectives based on the Tier 2 R26 evaluations and the exclusion of the groundwater ingestion exposure route. The RBCA-derived Tier 2 soil remediation objectives listed below were approved for the migration to groundwater exposure route.

| Chemical | Sample Location and Depth (Feet) | Remediation Objective | Distance Required for Concentration to Attenuate to Tier 1 Class I Groundwater Remediation Objective |
|-----------------|---|------------------------------|---|
| BENZENE | AAA-SB05 (1-3 ft) | 6.8 mg/kg | 72 |
| TCLP LEAD | AAA-SB03 (0-2 ft) | 0.017 mg/L | 68 |
| SPLP LEAD | AAA-SB04 (4-6 ft) | 0.1 mg/L | 540 |
| SPLP LEAD | AAA-SB05 (1-3 ft) | 0.014 mg/L | 82 |
| SPLP LEAD | AAA-SB06 (4-6 ft) | 0.032 mg/L | 355 |
| TCLP CADMIUM | AAA-SB06 (0-2 ft) | 0.023 mg/L | 135 |

SPLP = Synthetic Precipitation Leaching Procedure

TCLP = Toxicity Characteristic Leaching Procedure

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Groundwater Ingestion Exposure Route – The measured groundwater concentrations above the Tier 1 groundwater remediation objectives for the groundwater ingestion exposure route for Class I groundwater were proposed as remediation objectives based on the Tier 2 R26 evaluations and the exclusion of the groundwater ingestion exposure route. The RBCA-derived Tier 2 groundwater remediation objectives listed below were approved for the groundwater ingestion exposure route.

| Chemical | Sample Location | Remediation Objective | Distance Required for Concentration to Attenuate to Tier 1 Class I Groundwater Remediation Objective |
|--------------------|------------------------|------------------------------|---|
| BENZO(A)ANTHRACENE | AAA-MW02 | 0.00014 mg/L | 20 |
| TOTAL MANGANESE | AAA-MW01 | 0.66 mg/L | 545 |
| TOTAL MANGANESE | AAA-MW02 | 0.67 mg/L | 550 |
| TOTAL MANGANESE | AAA-MW03 | 0.36 mg/L | 295 |
| TOTAL THALLIUM | AAA-MW03 | 0.0045 mg/L | 260 |

mg/L = milligrams per liter

2.0 LOCATION/SCHEDULE OF REMEDIAL ACTIVITIES

The purpose of this RAP is to describe the proposed remedial techniques for the AAA Boatyards Site. The AAA Boatyards Site will consist of a park property which will include paved areas and open landscaped areas once the remedial activities are completed. Construction activities are scheduled to begin in August 2006 and will be completed by May 2007. Upon IEPA acceptance of this RAP, the proposed remedial activities will be completed in conjunction with the construction of the park property. Following the completion of the construction activities, a Remedial Action Completion Report will be drafted and submitted for approval. The anticipated completion date for this report is June 2007. The Remedial Action Completion Report will provide documentation of remedial activities, detail the institutional controls required to meet the remedial objectives, and provide any required notifications (such as notification of the use of the City of Chicago groundwater ordinance). The No Further Remediation (NFR) letter will be recorded to the title within two weeks of its receipt.

3.0 REMEDIAL TECHNOLOGIES SELECTED

Following the development of site-specific remediation objectives (Tier 2 SSL and RBCA evaluations) detailed in the ROR (Weston, March 2005), chemical concentrations above the ingestion, inhalation, and soil component of the groundwater ingestion exposure routes remain in

the site soil. The migration to Class I groundwater exposure route will be excluded utilizing institutional controls, which are discussed further in Section 1.5. Soil concentrations exceeding the ingestion and inhalation exposure routes will be excluded using either:

- Horizontal engineered barriers - These barriers (e.g. concrete, crushed concrete, and clean fill) will be constructed to eliminate the ingestion exposure route in accordance with 35 IAC Section 742.310 and 742.315. The engineered barriers will be constructed in accordance with 35 IAC Section 742.1100 and 742.1105.
- On-site relocation of contaminated media utilizing a soil management zone (SMZ) – Site soil containing concentrations of contaminants above the Tier 1 residential soil remediation objectives for the ingestion and the soil component of the migration to groundwater exposure routes will be relocated at the AAA Boatyards Site for the purposes of site grading.
- Removal of contaminated media – Site soil containing concentrations of contaminants above the Tier 1 residential soil remediation objectives for the inhalation exposure route will be excavated and transported off-site as special waste for disposal at a licensed landfill. Additionally, excess soil containing concentrations of contaminants above the Tier 1 residential soil remediation objectives for the ingestion and soil component of the migration to groundwater exposure routes may be excavated and transported off-site as special waste for disposal at a licensed landfill if the soil cannot be utilized for the purposes of site grading. Backfilling of the excavated areas will be completed as required by the redevelopment plan.

A combined approach of removal/relocation of soil exceeding Tier 1 residential soil remediation objectives and the installation of an engineered barrier may be utilized where feasible according to the redevelopment plan. For example, the top three feet of contaminated material may be removed, while allowing contaminated soil deeper than 3 ft bgs to remain. This area may then have a clean fill engineered barrier installed in order to eliminate the risks of exposure associated with the deeper contamination. The engineered barriers will also be used in conjunction with the City of Chicago groundwater use ordinance and a construction worker safety precaution restriction. Further details on institutional controls are discussed in Section 1.5.

3.1 Horizontal Engineered Barriers

Engineered barriers will be utilized to prevent exposure to material exceeding the soil remediation objectives for the ingestion exposure route. The planned post-remediation use of the property is a recreational park property. Figure 5 provides a schematic of three types of engineered barriers that

will be utilized, depending on the specific post-remediation use of the area. Areas designated for walkways will utilize a concrete engineered barrier, depending on the specific redevelopment requirements.

Green space will utilize an engineered barrier consisting of either recycled concrete and clean fill or clean fill. The recycled concrete and clean fill engineered barrier (Type 2 on Figure 5) will consist of a 6 to 12-inch layer of crushed concrete base, a geotechnical liner, a 18 to 24-inch layer of clean general fill (such as clay), and a 6 to 12-inch layer of topsoil. The crushed concrete base layer used in this engineered barrier will be generated from the existing concrete surfaces at the Site. The clean fill engineered barrier (Type 3 on Figure 5) will consist of a 24 to 30-inch layer of clean general fill and a 6 to 12-inch layer of topsoil. Both of recycled concrete and clean fill engineered barrier and the clean fill engineered barrier will have a minimal thickness of 3-feet. Clean fill material utilized to construct engineered barriers in green spaces will meet the Tier 1 residential soil remediation objectives. The engineered barriers shown in Figure 5 are consistent with, or equivalent to the requirements specified in 35 IAC 742, Subpart K – Engineered Barriers.

3.2 On-Site Relocation of Contaminated Media

A SMZ is proposed for the entire AAA Boatyards Site (Figure 6). The site redevelopment plan includes modifications to the existing site grade (Appendix A). The topography at certain portions of the site will be lowered in accordance with the redevelopment plan, while other portions of the site will be raised. Excess cut material not relocated on-site, will be transported offsite for disposal as a special waste.

This SMZ is proposed in accordance with 35 IAC 740.535 to allow consolidation and relocation of on-site contamination without violating the solid waste disposal regulations in 35 IAC 807 or 811-815. The relocation of contaminated soil within the AAA Boatyards Site will be used for structural fill (35 IAC 740.535 (a)(2)(A)) and consolidation purposes within the SRP site (35 IAC 740.535 (a)(2)(B)).

In order for the SMZ to comply with 35 IAC 740.535, certain requirements must be satisfied. The requirements, as specified in 35 IAC 740.535(b), and the explanation of how the proposed AAA Boatyards Site complies with these requirements are listed below:

- All contaminants of concern within the remediation site shall be identified by a comprehensive site investigation under Section 740.420 of this Part – The contaminants of concern within the AAA Boatyards Site were identified in the previously completed CSIR/ROR (Weston, March 2005).
- The horizontal and vertical dimensions of the SMZ shall be defined – The boundaries of the SMZ are identified in Figure 6 as the extent of the SRP site.
- The uses of the SMZ shall be defined – The SMZ has been proposed for the purposes of on-site grading and consolidation. Currently, the AAA Boatyards Site is relatively flat, at an approximate elevation 10 feet above the North Branch of the Chicago River. The redevelopment plan calls for a gradual grading from west to east, forming a gentle slope down to the bank of the river. Portions of the removed material will be utilized as structural fill to raise the elevation along the western portion of the site.
- All contaminants of concern within the SMZ shall satisfy the requirements of 35 IAC 742.305(a) through (f) – In the CSIR/ROR (Weston, March 2005), Section 5.2 provides a discussion that illustrates that the contaminants of concern within the AAA Boatyards Site meet the requirements of 35 IAC 742.305.
- All applicable requirements of 35 IAC 742 shall be satisfied within the SMZ (e.g., all exposure routes must be addressed; institutional controls and engineered barriers shall be in full compliance with 35 IAC 742, Subparts J and K) – All applicable requirements of 35 IAC 742 are satisfied within the SMZ, including addressing all exposure routes, institutional controls, and engineered barriers. The soil ingestion and migration to Class I groundwater exposure routes are being excluded using pathway exclusion (35 IAC 742.300), including engineered barriers and the City of Chicago groundwater ordinance. Soil containing concentrations above the Tier 1 residential soil remediation objectives for the inhalation exposure route will not be placed within the SMZ. Rather, these soils will be excavated and transported off-site as special waste for disposal at a licensed special waste landfill. Also, the engineered barriers and institutional controls are further discussed in Sections 1.3.1 and 1.5, respectively. A cross section that depicts the cut and fill areas following development is presented in Figure 7.
- The SMZ shall be constructed, operated and maintained in a manner that:
 - Prevents odor from occurring – As illustrated in the soil boring logs in the CSIR/ROR (Weston, March 2005), odors were not encountered within the soil borings advanced at the AAA Boatyards Site. In addition, the type of fill encountered at the site is inorganic in nature, and is not anticipated to present a significant source of odors during remediation/construction.

- Minimizes fugitive emissions of particulate matter in accordance with 35 Ill. Adm. Code 212 Subpart K – During construction/remediation, fugitive emissions of particulate matter will be adequately controlled. Visual emissions of dust will be minimized using engineering controls such as wetting of soil, misting, and/or wind screens. In addition, air quality will be monitored and recorded to ensure that fugitive dust emissions are within acceptable levels.
 - Prevents the generation of potentially contaminated runoff – During construction/remediation activities, grading will be completed in a manner that prevents the generation of potentially contaminated runoff. Silt fences will be installed around the perimeters of the site to ensure that contaminated soil that is eroded by precipitation runoff is not transported off-site. The site grading plans will ensure that storm water runoff will be adequately controlled.
 - Does not provide a breeding place or food source for vectors – Following on-site grading, the construction of sidewalks and landscaped areas (all engineered barriers) are anticipated to begin immediately. The installation of the engineered barriers will ensure that a breeding place or food source for vectors is not created.
- Within the SMZ, management of soil containing hazardous wastes shall comply with the applicable requirements of the Resource Conservation and Recovery Act (42 USCA 6901 - 6992k) and 35 IAC 700 – 730 – No hazardous wastes have been identified at the AAA Boatyards Site.
 - Soil containing contaminants of concern above the concentrations in 35 IAC 742 Appendix B, Table A (Tier 1 objectives for residential properties) or approved by the Agency pursuant to 35 IAC 742.510(c) may not be treated or placed in any area where all contaminants of concern within the remediation site are at or below the concentrations in 35 IAC 742 Appendix B, Table A (Tier 1 objectives for residential properties) or approved by the Agency pursuant to 35 IAC 742.510(c) – As discussed in the CSIR/ROR (Weston, March 2005), the contamination within the AAA Boatyards Site extends throughout the site and is delineated by the property boundaries in all directions. Therefore, no areas are considered at or below the Tier 1 objectives and this requirement is not applicable to the AAA Boatyards Site.

3.3 Removal of Contaminated Media

A portion of the contaminated soil from the AAA Boatyards Site will be removed and disposed off-site. Soil will be excavated from the identified portion of the site containing benzene concentrations above the Tier 1 residential soil remediation objective for the inhalation exposure route. Additionally, approximately 3,390 cubic yards soil will be removed during site grading and will not

be reused to raise the elevation at the site. This excess soil will be transported to a licensed special waste landfill for disposal.

4.0 CONFIRMATION SAMPLING

Excavation of the soil associated with the benzene exceedance of the Tier 1 residential soil remediation objective for the inhalation exposure route is the planned method of eliminating this pathway. While the exact extent of benzene contamination above the Tier 1 residential soil remediation objective for the inhalation exposure route has not been precisely defined, it is assumed it is associated with the stained areas identified during the CSIR and characterized by the soil sample collected from AAA-SB05 (1 to 3 ft). Following the excavation and removal off-site of the soil in this area, confirmation samples will be collected and analyzed for benzene to demonstrate compliance with the remedial objectives, in accordance with the following sampling plan.

- Confirmation samples will be collected using sterile, disposable scoops and disposable nitrile gloves will be worn by sampling personnel. New sampling equipment will be utilized for each discrete sample. Soil samples will be collected and preserved in accordance with SW-846 Method 5035, closed system purge-and-trap and extraction for volatile organics. Soil samples will be collected using an EnCore sampler and preserved by the analytical laboratory within 48 hours of sample collection.
- Confirmation samples will be analyzed by an accredited analytical laboratory (in accordance with 35 IAC 186). Confirmation samples will be analyzed for benzene to ensure that remaining soil concentrations are below the Tier 1 residential soil remediation objectives for the inhalation exposure route.
- A minimum of one excavation floor sample will be collected from the excavation. One floor sample will be collected from each 200 square foot (ft²) area of the excavation. Sidewall samples will only be collected from the depth of 1 to 3 feet on the sidewalls of the excavation to demonstrate compliance with the remedial objectives. Sidewall samples will be collected at a frequency of one per 20 foot section of sidewall. At a minimum, one sidewall sample will be collected from each sidewall.

5.0 INSTITUTIONAL CONTROLS

The AAA Boatyards Site is subject to the City of Chicago groundwater use ordinance that effectively prohibits the installation of potable supply wells. In addition, the City of Chicago and

the IEPA have entered into a Memorandum of Understanding (MOU) intended to eliminate the potential for human ingestion of groundwater. The MOU requires the City of Chicago to notify the IEPA of changes to the ordinance and maintain a registry of sites with NFR letters. The groundwater ordinance meets the requirements of an institutional control provided in 35 IAC Section 742.320(d) and 742.1015.

The City of Chicago is proposing to utilize the City of Chicago groundwater use ordinance to eliminate both the on- and off-site portions of the migration to groundwater and the groundwater ingestion exposure routes. Based on the modeled extent of potential groundwater impacts provided in the ROR (Weston, March 2005), notification of off-site properties located in the modeled extent of possible groundwater impacts will be provided as specified in 35 IAC Section 742.1015(b).

In addition, safety precautions for all construction workers performing subsurface construction activities will be required. The following procedures must be followed during any construction activity in the impacted areas or if intrusive construction activities result in a temporary breach of an engineered barrier:

- The construction worker will be notified by the property owner/operator in advance of intrusive activities. Such notifications will enumerate the contaminants of concern known to be present; and
- The property owner/operator will require construction workers to implement protective measures consistent with good industrial hygiene practice.

This construction worker safety precaution will be required in the NFR letter. The NFR letter meets the requirements of an institutional control provided in 35 IAC Section 742.1005.

6.0 POST-REMEDIAL MONITORING

Long term maintenance of the engineered barrier(s) will be the responsibility of the owner/operator. The barrier will be inspected whenever any activities are likely to cause a breach in the barrier, such as during the installation/repair of underground utilities or future infrastructure improvements.

FIGURES



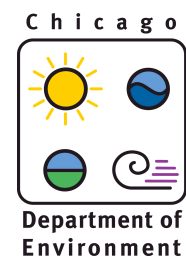
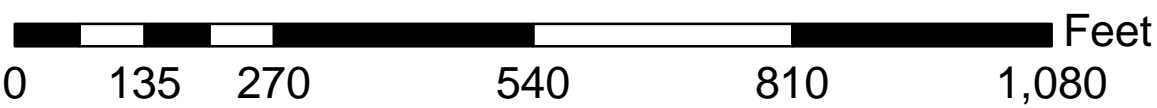
Legend

- Tax Parcel Lines
- Site Boundary
- Buffer: 1,000 Feet
- Buildings
- Parks
- schools



**City of Chicago
Department of Environment**

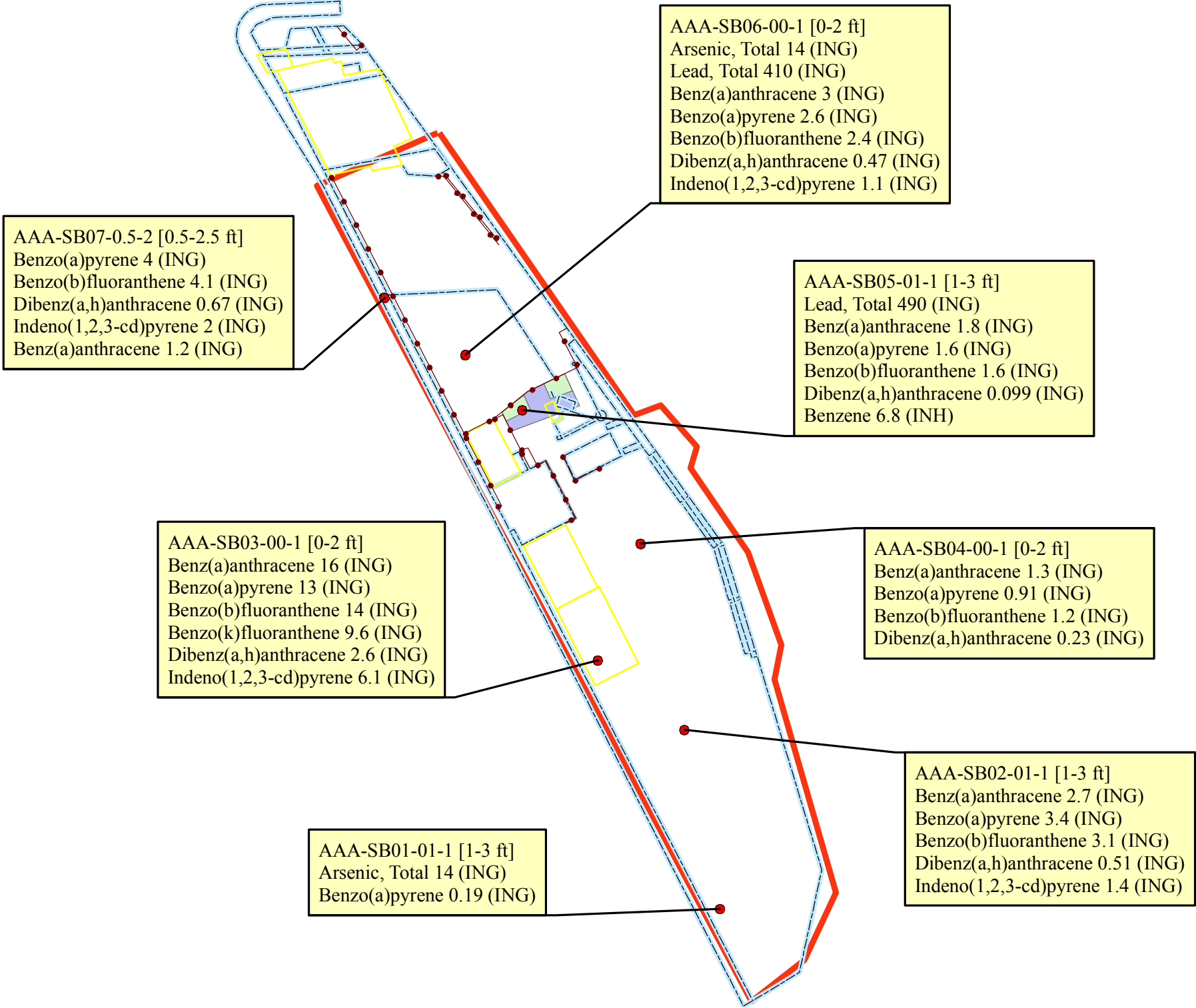
AAA Boatyards Site and Surrounding Properties Map
1111 N. Elston Avenue, Chicago, Illinois
Located in Section 5, Township 39 North, Range 14 East
1 inch: 200 feet (1:2400)
Buffer:1,000 Feet



**City of Chicago
Richard M. Daley, Mayor**



Copy © 2004 City of Chicago



Legend

- Site Boundary
- Concrete
- Fence
- Buildings
- Sample Locations
- Locations with Exceedences
- Oil Stained Area
- Estimated Extent of Benzene Contamination

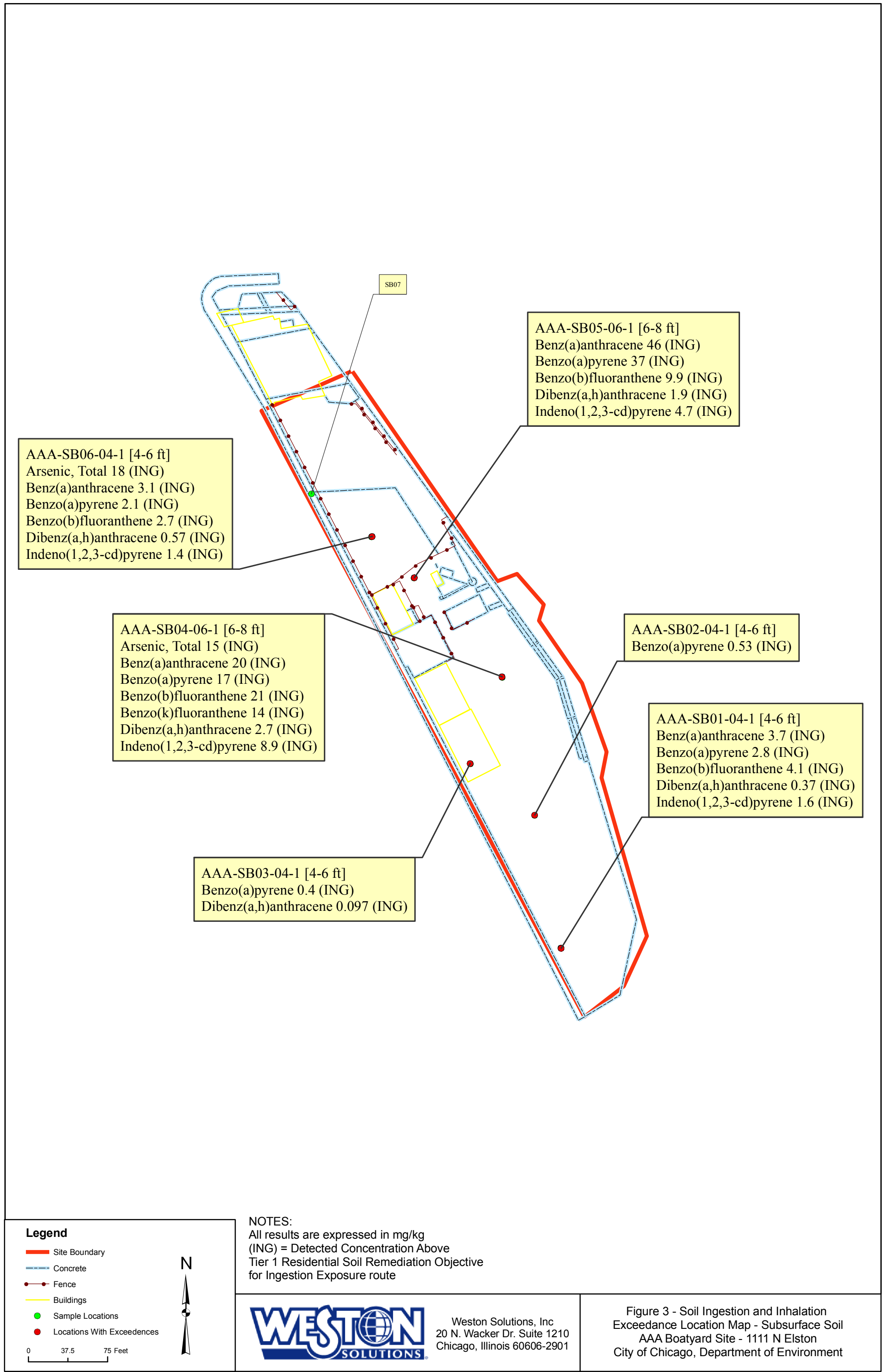
0 45 90 Feet

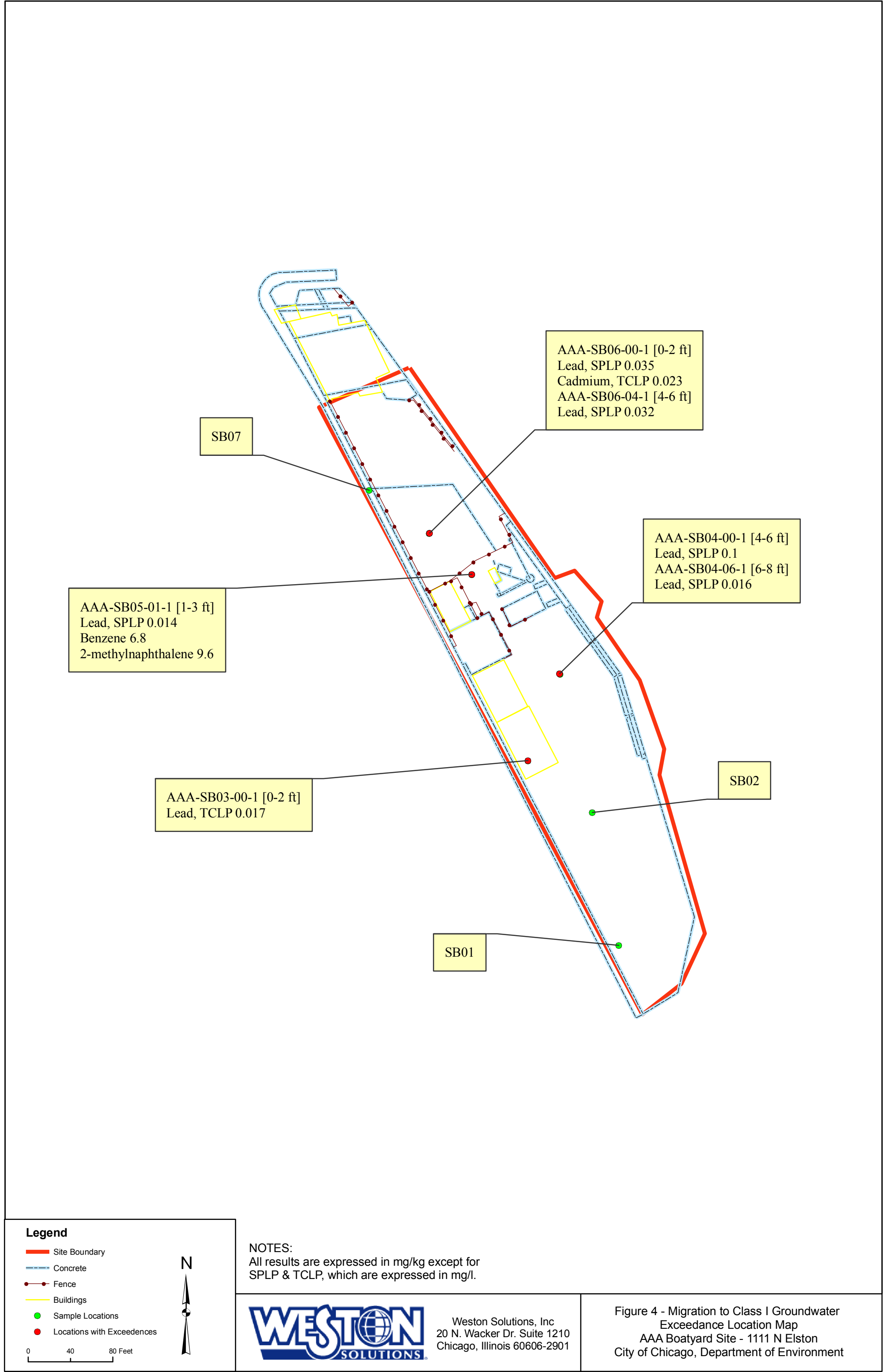
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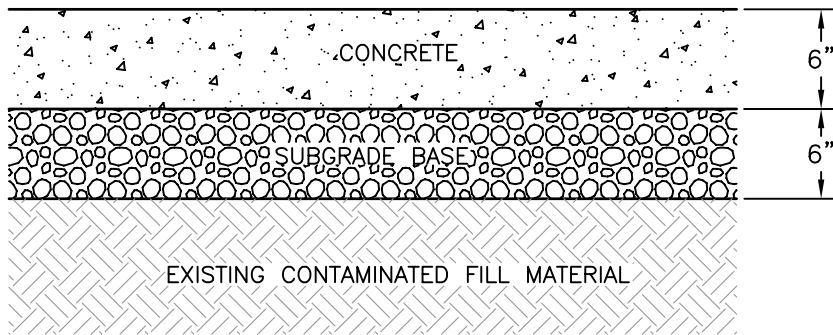
NOTES:
All results are expressed in mg/kg
(INH) = Detected Concentration Above
Tier 1 Residential Soil Remediation Objective
for Inhalation Exposure Route
(ING) = Detected Concentration Above
Tier 1 Residential Soil Remediation Objective
for Ingestion Exposure Route

Weston Solutions, Inc
20 N. Wacker Dr. Suite 1210
Chicago, Illinois 60606-2901

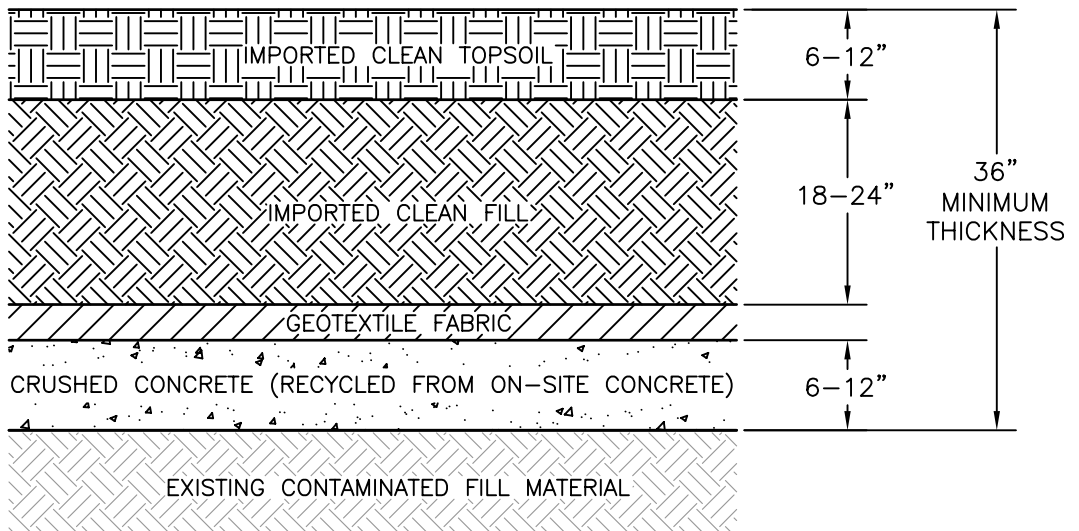
Figure 2 - Soil Ingestion and Inhalation
Exceedance Location Map - Surface Soil
AAA Boatyard Site - 1111 N Elston
City of Chicago, Department of Environment



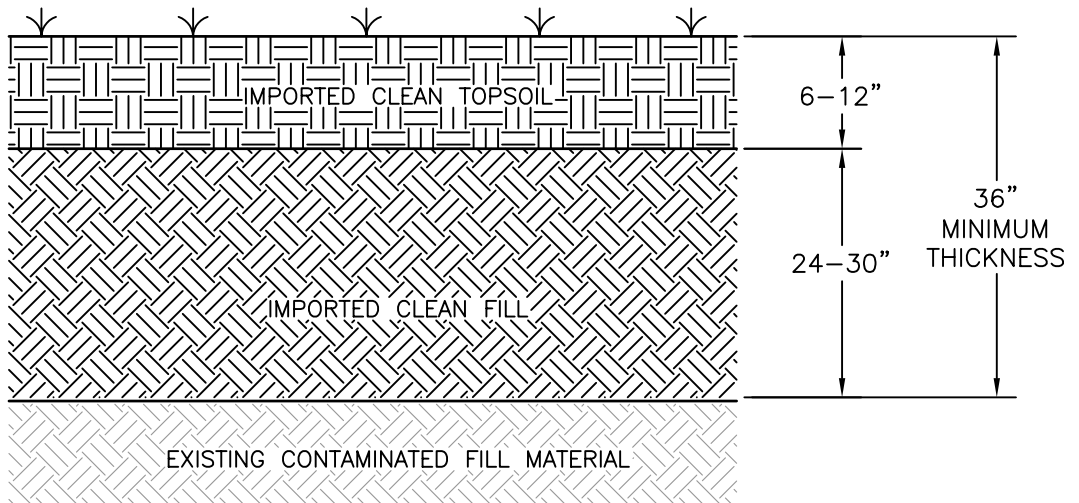




TYPE 1: CONCRETE BARRIER



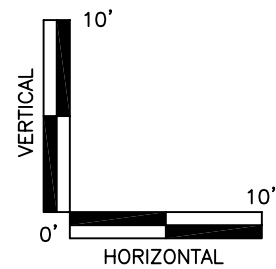
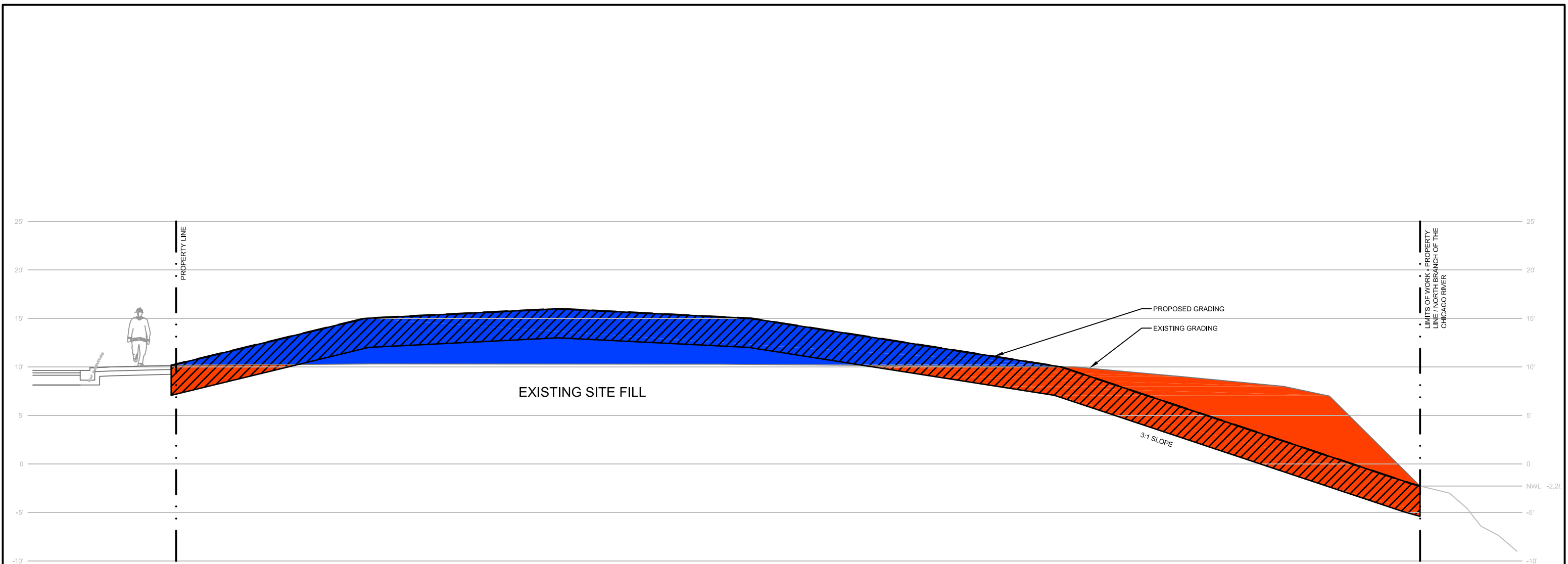
TYPE 2: RECYCLED CONCRETE AND CLEAN FILL ENGINEERED BARRIER






TYPE 3: CLEAN FILL ENGINEERED BARRIER

FIGURE 5

J:\L100-SECTIONS.dwg



LEGEND

-  SITE FILL TO BE RELOCATED WITHIN SOIL MANAGEMENT ZONE
-  SITE FILL TO BE CUT IN ACCORDANCE WITH REDEVELOPMENT PLAN
-  CLEAN FILL CAP



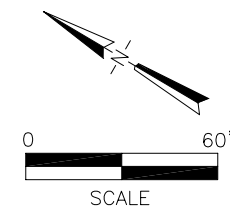
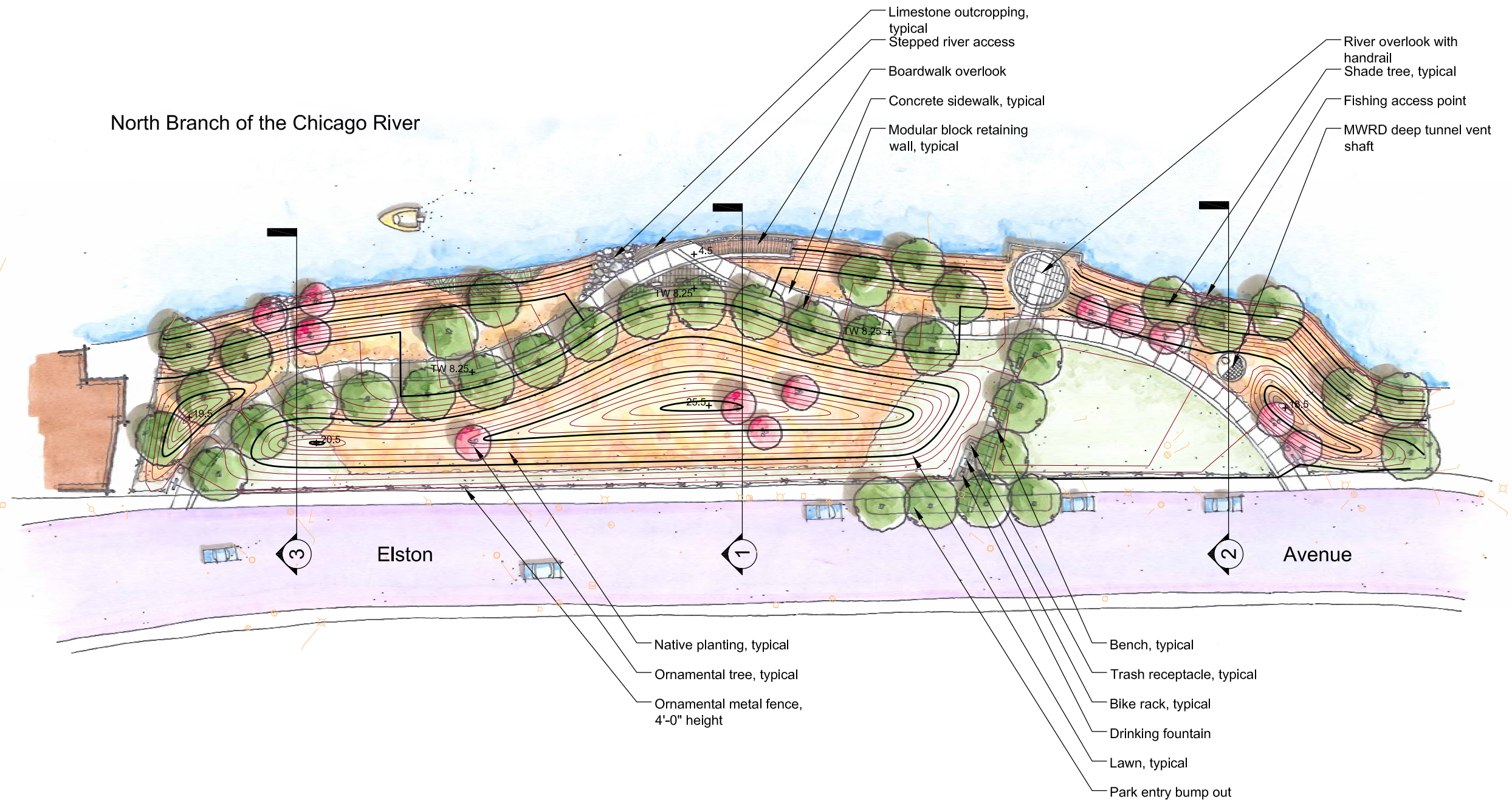
20 North Wacker Drive
Suite 1210
Chicago, Illinois
60606

TYPICAL POST REDEVELOPMENT CROSS SECTION
AAA BOATYARD
1111 N ELSTON AVENUE
Chicago, Illinois 60622

FIGURE 7

APPENDIX A
SITE REDEVELOPMENT PLAN

North Branch of the Chicago River



APPENDIX A



20 North Wacker Drive
Suite 1210
Chicago, Illinois
60606

SCHEMATIC DESIGN - SITE PLAN
AAA BOATYARDS SITE
CITY OF CHICAGO
Chicago, Illinois